COMPUTATION AND PROBLEM SOLVING FOR YOUNG ADULTS

A self-instructional program
using the APH Student Speech Plus Calculator

by

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Foreword

The inspiration for this publication came from The APH Student Speech Plus Calculator: An Aid to Successful Mathematics Learning (1977) by Dr. William Emile Lamon, Mathematics Professor, University of Oregon, Eugene. Dr. Lamon's original work is a calculator-based program designed "to enable its users to successfully master everyday, fundamental mathematics." Dr. Lamon directs students "to review in their regular mathematics textbook their understanding of basic operations, algorithms, rounding, and significant figures, prior to calculator usage." The original is a textbook extension, done under contract to the American Printing House for the Blind (APH).

This self-instructional version was rewritten by Dr. Lamon; by Anthony Evancic, mathematics teacher, Western Pennsylvania School for Blind Children; and by Tuck Tinsley, mathematics teacher, Florida School for the Deaf and Blind.

It draws from the original for overall format, for scope, and sequence of tasks, but approximately 70% of the content has been rewritten to insure its usability as a self-instructional program for young adults independent of additional textbook instruction. The content is presented in a simple, direct format which focuses on computation and problem solving. Generally, each lesson presents computation exercises and is followed by "word problems" which employ operations from the computation exercises in their solution. The problem solving exercises are more oriented to daily living and to real life situations than to stereotyped word problems traditionally found in mathematics textbooks. The content and its presentation, however, make this publication suitable for students as early as junior high school.

APH is indebted to Stephanie Richards, math teacher, Indiana School for the Blind, who critiqued and edited the final draft of the program.

The project director and the authors owe a special debt of gratitude to Robert Glass, American Printing House research assistant, who made a significant contribution in rewriting, in editing, and in preparing the copy for publication.

Frank L. Franks
Project Director

TABLE OF CONTENTS

FOREWORD. I

SCOPE AND SEQUENCE OF TASKS:

SECTION A: YOUR APH STUDENT SPEECH PLUS CALCULATOR

A.1. Getting Started. 1
A.2. Learning to Key in Numbers .5

SECTION B: COMPUTATIONAL SKILLS

B.1. Addition 7
B.2. Subtraction. 10
B.3. Addition and Subtraction 12
B.4. Multiplication 14
B.5. Division 16
B.6. Multiplication and Division. 18
B.7. Combining Basic Operations 20

SECTION C: FRACTIONS

C.1. Entering Fractions and Mixed Numbers 23

SECTION D: OTHER MATHEMATICAL OPERATIONS

D.1. Repeated Use of the [=] Key: Adding and Subtracting. 25
D.2. Repeated Use of the [=] Key: Multiplying and Dividing. 27
D.3. Repeated Use of the [=] Key: Raising to a Power and Finding a Reciprocal. 28
D.4. The Use of the [⧗] Key: Negative Numbers 30
D.5. Basic Operations with the [%] Key. 32
D.6. The Use of the [√] Key 33
D.7. Learning to Use Memory--Part I 34
D.8. Learning to Use Memory--Part II. 37
D.9. Learning to Use Memory--Part III 41
D.10. Overflow 44
D.11. Underflow and Error Conditions 46

SECTION E: THE CALCULATOR IN DAILY LIVING

E.1. Sale Price 48
E.2. Discounts. 50
E.3. Rate of Increase or Decrease 51
E.4. Installment Buying--Part I 53
E.5. Installment Buying--Part II. 56
E.6. Simple Interest. 59
E.7. Compound Interest. 60
E.8. Best Buys. 63
E.9. Payrolls 65
E.10. The Stock Exchange 67

SECTION A: THE APH STUDENT SPEECH PLUS CALCULATOR

A.1.: GETTING STARTED

OBJECTIVE: To become familiar with the layout and features of the calculator.

Note: The information in the following discussion can also be found in the APH STUDENT SPEECH PLUS OWNER'S MANUAL.

DISCUSSION: The calculator is properly oriented when the plastic window is directly opposite the keyboard from the user.

LAYOUT

THE ON-OFF/VOLUME CONTROL is located at the far right top corner of the calculator To turn the machine on, pull out the knob. The calculator will announce "Clear," indicating that it is ready to receive entries. To increase the volume, turn the knob clockwise. The raised line running the length of the knob shows the volume level and can be used to preset the volume.

THE 8 DIGIT VISUAL DISPLAY has space for negative number, overflow, error, and low battery indicators.

THE METAL RING at the far left corner is for attaching the optional theft-inhibiting cable.

THE BATTERY CHARGER JACK is on the left end of the calculat
An internal, rechargeable battery allows portable operation for typically more than 3 hours of continuous "talking" use. With the power switch off, the recharging time is 4-8 hours, but the calculator will operate and charge at the same time. Since the battery cannot overcharge, it

will not be damaged if the charger is plugged in indefinitely. When the battery is low, "Low" is announced before each results.

THE EARPHONE JACK is on the right end of the calculator.

THE KEYBOARD displays six columns of four keys. They are grouped in three sets for ease of location and use. There are two columns in the first set on the left. From the far end to the near end the keys in the first column on the left are: Memory Key, Square Root Key, Percent Key, and Clear Key. They say: "M," "Root," "Percent," and "Clear." The four basic function keys for addition, subtraction, multiplication, and division are in the second column on the left side of the keyboard. From the far end to the near end these say: "Plus," "Minus," "Times," and "Over."

The center three columns of the keyboard contain the numbers arranged like the keyboard of a pushbutton telephone, including the Decimal Point and Change Sign Keys. Across the far row, from left to right, are the Digit Keys 1, 2, and 3. Across the second row are the Digit Keys 4, 5, and 6. Across the third row are the Digit Keys 7, 8, and 9. Across the fourth row, from left to right, are the Decimal Point Key, the Digit Key 0, and the Change Sign Key.

The single column on the right from far to near end displays the Equals Key, the Speak Key, the Readout Rate Switch which determines the rate at which the result will be spoken, and the Swap Key which exchanges the display number with the memory number.

Inspect the first column of keys on the left. Pressing /M/, /+/ or /M/, /-/ adds to or subtracts from memory the number on display. Pressing /M/, /=/ recalls and displays a number stored in memory. Pressing /M/, /C/ clears the memory. Below the Memory Key, the Root Key (/√/) generates the square root of the display number and immediately displays the results. Likewise, the Percent Key (/%/) completes the percentage calculation and immediately displays the answer. (The Memory, Swap, Root, and Percent Keys have a broad variety of applications and more complete explanation of their uses will be found in Section D.) Pressing the Clear Key (/C/) once will clear a number from display but will leave previous entries intact. Pressing the Clear Key twice will clear the display and all accumulated entries, but not memory.

The second column of keys on the left, as already stated, are the basic function keys (+, -, X , and ÷). If one of these keys is mistakenly pressed for another, do not press the Clear Key; simply press the appropriate function key.

In the three center columns, the Digit Keys 0-9 enter numbers for calculations; numbers of more than one digit are entered in normal order from left to right; the calculator says "Oh" for 0. The Decimal Key (/·/) says "Point" and enters a decimal point into a number where it is pressed in sequence. The Change Sign Key (/X/) says "Times-Minus" and reverses the sign of the display number.

In the last column on the right, the Equals Key (/=/) is most often used to complete an operation and display the results. It is not necessary to press /C/ before starting a new calculation when the last calculation was completed with the Equals Key. In later sections, the Equals Key is used in conjunction with the automatic constant feature for repetitive operations. The Speak Key (/SP/), located below the Equals Key announces what is on display in sequence from left to right; a negative display is preceded by "Minus." The Speak Key may be pressed at any time for display readout without disturbing any entries, and it must be pressed to hear the result at the end of a calculation.

THE FLOATING DECIMAL feature automatically inserts a decimal point at the appropriate position in a calculation's result. Unlike many calculators, the APH Student Speech Plus neither displays nor announces insignificant 0's to the right of the decimal point in the result of a calculation.

USER HINTS

Many people operate the calculator with two hands, rotating it slightly counter-clockwise, with the left hand controlling the two function columns on the left and the right hand operating the other columns. The 5-Key is a "home key" and has a raised dot. As in typing, two keys cannot be entered at the same time. Press each key decisively, then lift up. As long as one key is depressed, a second key will not operate.

SECTION A: THE APH STUDENT SPEECH PLUS CALCULATOR

A.2.: LEARNING TO KEY IN NUMBERS

OBJECTIVE: To learn to key in numbers correctly.

DISCUSSION: The process of entering a number or operation into the calculator is called keying in.

Numbers are entered into the calculator by keying in the digits from left to right. By listening carefully you can catch any error you make. If a mistake is made in keying in a number, simply press the Clear Key once and re-enter the number.

Clear the calculator before beginning any problem by pressing the Clear Key twice. Any time you want to hear the digits that you have keyed in, simply press the Speak Key. Thus, you can always check to make sure that a number is keyed in correctly.

EXAMPLE: Press the Clear Key twice and key in the digits 1, 2, 3, and 4. Press the Speak Key. You will hear: 1 2 3 4 point.

Now key in the digits 5 and 6, and press the Speak Key. You will hear: 1 2 3 4 5 6 point.

Repeat this example. But after hearing 1 2 3 4 press the Clear Key once before keying in the digits 5 and 6. Notice that the final result is now 5 6 point. Pressing the Clear Key once erases the digits of the last number you have keyed in.

Note: The largest number that can be entered into the calculator is the 8 digit number 99,999,999.

EXERCISES: Key in each of the following numbers and use the Speak Key to check for errors.

914 14 87 0.25 3.56 1,238

23.06 829,378 2,354.378 73,954,849

6,293.25 28,394.78 27,394

SECTION B: COMPUTATIONAL SKILLS

B.1.: ADDITION

OBJECTIVE: To add.

DISCUSSION: Throughout this manual, flow diagrams are used to illustrate the proper sequence of keying in the numbers and operations necessary to solve a problem. For example, the flow diagram for 5 + 3 is as follows:

/C/ --/C/ --/5/ --/+/ --/3/ --/=/ --/SP/

You hear: 8 point.

EXAMPLE:

$$\begin{array}{r} 4.5 \\ 530.0 \\ .7 \\ +\ \underline{68.0} \end{array}$$

SOLUTION: /C/ --/C/ --/4.5/ --/+/ --/530/ --/+/ --
/.7/ --/+/ --/68/ --/=/ --/SP/

You hear: 603 point 2.

EXERCISES:

1. $\begin{array}{r} 22 \\ 4 \\ 81 \\ \underline{+\ 9} \end{array}$

2. $\begin{array}{r} 34.6 \\ 5.9 \\ 63.0 \\ \underline{+\ \ .6} \end{array}$

3. 211 + 765 + 685 + 11 + 145 + 396 =

4. .05 + 86.8 + 2.32 + 64.9 + 81 =

5. Maria went grocery shopping to prepare a special meal for her weekend visitors, but she had only $20.00 to spend. Can she pay the entire grocery bill if the things she needs cost: 73¢, 69¢, $2.35, $1.07, $4.89, 37¢, 89¢, $1.10, 25¢, $3.25, 79¢, 70¢, $1.39, $1.49, $2.25, and 99¢?

6. Neil sat down to pay his regular monthly bills. He owed $180.00 to his landlady, $4.17 for water, $14.21 to the electric company, $27.89 for gas, $34.34 to the phone

company, $89.15 on his bank loan, and $100.00 for his savings account. Since he is paying all these amounts by check, at least how much money does Neil need in his checking account?

7. An advertising executive from Mexico City has just completed a business trip. Following is a list of the cities he visited and the distances between them in air miles. What is the total number of miles the executive traveled by plane?

Mexico City to New Orleans	934 mi.
New Orleans to Washington	996 mi.
Washington to Miami	923 mi.
Miami to Havana	229 mi.
Havana to Panama City	990 mi.
Panama City to Mexico City	1,299 mi.

8. The eight home basketball games at Fletcher High School attracted 934, 1,069, 876, 691, 997, 863, 741, and 1,055 spectators. What was the total attendance for these eight games?

ANSWERS:

1. 116.
2. 104.1
3. 2,213.
4. 235.07
5. /C/ --/C/ --/.73/ --/+/ --/.69/ --/+/ --/2.35/ --/+/ --/1.07/ --/+/ --/4.89/ --/+/ --/.37/ --/+/ --/.89/ --/+/ --/1.10/ --/+/ --/.25/ --/+/ --/3.25/ --/+/ --/.79/ --/+/ --/.70/ --/+/ --/1.39/ --/+/ --/1.49/ --/+/ --/2.25/ --/+/ --/.99/ --/=/ --/SP/ $23.20; No

6. /C/ --/C/ --/180/ --/+/ --/4.17/ --/+/ --/14.21/ --
/+/ --/27.89/ --/+/ --/34.34/ --/+/ --/89.15/ --
/+/ --/100/ --/=/ --/SP/ $449.76

7. /C/ --/C/ --/934/ --/+/ --/996/ --/+/ --/923/ --
/+/ --/229/ --/+/ --/990/ --/+/ --/1299/ --/=/ --
/SP/ 5,371.

8. /C/ --/C/ --/934/ --/+/ --/1069/ --/+/ --/876/ --
/+/ --/691/ --/+/ --/997/ --/+/ --/863/ --/+/ --
/741/ --/+/ --/1055/ --/=/ --/SP/ 7,226.

SECTION B: COMPUTATIONAL SKILLS

B.2.: SUBTRACTION

OBJECTIVE: To subtract.

EXAMPLE:

$$\begin{array}{r} 372 \\ -\ 125 \\ \hline \end{array}$$

NOTE: In following sections, the /C/ --/C/ -- steps in flow diagrams will be omitted and the reader must be certain the calculator is clear before beginning any calculations.

SOLUTION: Press /372/ --/-/ --/125/ --/=/ --/SP/

You hear: 247 point.

EXERCISES:

1. $\begin{array}{r} 378 \\ -\ 59 \\ \hline \end{array}$

2. $\begin{array}{r} 73.2 \\ -\ 69.7 \\ \hline \end{array}$

3. 87 - 9.22 =

4. 517 - 146 - 72 -11 =

5. After Lou deposited her paycheck, she had $453.17 in her checking account. That night she wrote checks for $130.00, $27.14, $11.87, and $15.40. How much was then left in her checking account?

6. The students in a general science class were asked to measure the width of a metal sample. One student recorded a measurement of 1.9265 inches. His partner wrote 2.0183 inches for his answer. By how much do these measurements diffe

7. A piece of merchandise that normally sells for $345.50 is reduced in price to $255.13. What is the discount?

8. Ten years ago the population of a certain city was 115,892. This year the population is 137,001. By how much has the population increased in the last 10 years?

ANSWERS:

1. 319.
2. 3.5
3. 77.78

4. 288.

5. /453.17/ --/-/ --/130/ --/-/ --/27.14/ --/-/ --
/11.87/ --/-/ --/15.4/ --/=/ --/SP/ $268.76

6. /2.0183/ --/-/ --/1.9265/ --/=/ --/SP/ 0.0918

7. /345.5/ --/-/ --/255.13/ --/=/ --/SP/ $90.37

8. /137001/ --/-/ --/115892/ --/=/ --/SP/ 21,109.

SECTION B: COMPUTATIONAL SKILLS

B.3.: ADDITION AND SUBTRACTION

OBJECTIVE: To perform both additions and subtractions within a problem.

EXAMPLE: 324 - 69 + 8 - 42 =

SOLUTION: /324/ --/-/ --/69/ --/+/ --/8/ --/-/ --/42/ --/=/ --/SP/

You hear: 221 point.

EXERCISES:

1. 69.2 - 7.1 + 36 - .9 =
2. 382 + 496 - 29 - 149 =
3. 542 - 278 - 149 + 274 =
4. 8.31 - 2.49 + 8.71 + .17 =
5. Stan went to the grocery store with several coupons he had collected. The costs of the items he purchased were: $3.57, 78¢, $1.29, and $1.69. His coupons were for discounts of $1.00, 15¢, and 30¢. How much should the cashier charge him?
6. A jet plane left Boston with 235 passengers aboard. In New York City 57 passengers deplaned and 78 boarded. In Pittsburgh 55 passengers deplaned and 39 boarded. In Columbus 41 passengers deplaned and 12 boarded. How many passengers were on the plane when it landed for its final stop in Chicago?
7. The balance in the account of the Trivia Club at the beginning of August was $828.82. During the month the treasurer wrote checks for $71.18, $129.25, and $19.15 to pay bills. She then made deposits of $59.50, $85.00, and $75.75. Finally she wrote a check for $33.18. What

was the balance in the account at the end of August?

8. The areas of the seven continents are listed below in square miles. The total area of the two largest continents, Africa and Asia, is how much more than the total area of the other five continents combined?

Continent	Area
Africa	11,596,000
Asia	17,035,000
Antarctica	5,300,000
Australia	2,948,366
Europe	3,800,000
North America	9,435,000
South America	6,860,000

ANSWERS:

1. 97.2
2. 700.
3. 389.
4. 14.7
5. /3.57/ --/+/ --/.78/ --/+/ --/1.29/ --/+/ --/1.69/--
   /-/ --/1/ --/-/ --/.15/ --/-/ --/.3/ --/=/ --/SP/ $5.88
6. /235/ --/-/ --/57/ --/+/ --/78/ --/-/ --/55/ --/+/ --
   /39/ --/-/ --/41/ --/+/ --/12/ --/=/ --/SP/ 211.
7. /828.82/ --/-/ --/71.18/ --/-/ --/129.25/ --/-/ --
   /19.15/ --/+/ --/59.5/ --/+/ --/85/ --/+/ --/75.75/ --
   /-/ --/33.18/ --/=/ --/SP/ $796.31
8. /11596000/ --/+/ --/17035000/ --/-/ --/5300000/ --
   /-/ --/2948366/ --/-/ --/3800000/ --/-/ --/9435000/ --
   /-/ --/6860000/ --/=/ --/SP/ 287,634.

SECTION B: COMPUTATIONAL SKILLS

B.4.: MULTIPLICATION

OBJECTIVE: To multiply.

EXAMPLE:

$$\begin{array}{r} 472 \\ \underline{\times\ 83} \end{array}$$

SOLUTION: /472/ --/X/ --/83/ --/=/ --/SP/

You hear: 39,176 point.

EXERCISES:

1. $\begin{array}{r} 568 \\ \underline{\times\ 74} \end{array}$ 2. $\begin{array}{r} 321 \\ \underline{\times\ 35} \end{array}$ 3. $\begin{array}{r} 142 \\ \underline{\times\ 489} \end{array}$

4. .18 x 2.93 =

5. 8.25 x 146 x .17 =

6. If a certain make of car averages 22 miles per gallon of gasoline on the open road, how many miles can a motorist hope to travel on 19.5 gallons?

7. A man buys a 1 pound can of pipe tobacco each month. If his brand of tobacco sells for $4.89 per 1 pound can, how much money does the man spend on pipe tobacco per year?

8. During the Christmas season a popular brand of AM/FM/CB portable radio sold for $44.95. What were the total sales for 75 of these radios?

9. Karen earns $4.15 per hour. If she works 40 hours per week, what are her earnings per year?

10. If a yard is equal to .9144 meters, what is 50 yards in meters? If a meter is equal to 1.0936 yards, what is 50 meters in yards?

ANSWERS:

1. 42,032.

2. 11,235.

3. 69,438.

4. 0.5274

5. 204.765
6. /19.5/ --/X/ --/22/ --/=/ --/SP/ 429.
7. /12/ --/X/ --/4.89/ --/=/ --/SP/ $58.68
8. /75/ --/X/ --/44.95/ --/=/ --/SP/ $3,371.25
9. /4.15/ --/X/ --/40/ --/X/ --/52/ --/=/ --/SP/ $8,632.
10. /50/ --/X/ --/.9144/ --/=/ --/SP/ 45.72

    /50/ --/X/ --/1.0936/ --/=/ --/SP/ 54.68

SECTION B: COMPUTATIONAL SKILLS

B.5.: DIVISION

OBJECTIVE: To divide.

EXAMPLE: 864 ÷ 36 =

SOLUTION: /864/ --/÷/ --/36/ --/=/ --/SP/

You hear: 24 point.

EXERCISES:

1. 714 ÷ 42 =   2. 203 ÷ 29 =

3. 9.57 ÷ .33 =   4. 53.6 ÷ .8 =

5. 521 ÷ 104.2 =

6. A plane flies nonstop from Washington to Moscow, a distance of 4,862 miles, in 11 hours. What is the average speed of the plane?

7. The 48 members of the Trivia Club purchased a block of box seat tickets for the final baseball game of the season. If the treasurer collected $204 to pay for the tickets, what was the cost per ticket?

8. If 17.5 gallons of gasoline cost $10.64, what is the cost per gallon?

9. A well known brand of calculator was selling for $10.95 at the local office supply store last week. If the total receipts for the sale of the calculators amounted to $908.85, how many were sold?

ANSWERS:

1. 17.

2. 7.

3. 29.

4. 67.

5. 5.

6. /4862/ --/÷/ --/11/ --/=/ --/SP/ 442.
7. /204/ --/÷/ --/48/ --/=/ --/SP/ $4.25
8. /10.64/ --/÷/ --/17.5/ --/=/ --/SP/ 0.608 or 60.8¢
9. /908.85/ --/÷/ --/10.95/ --/=/ --/SP/ 83.

SECTION B: COMPUTATIONAL SKILLS

B.6.: MULTIPLICATION AND DIVISION

OBJECTIVE: To perform both multiplications and divisions within a problem.

EXAMPLE: 96 x 18 ÷ 32 x 9 =

SOLUTION: /96/ --/X/ --/18/ --/÷/ --/32/ --/X/ --/9/ --/=/ --/SP/

You hear: 486 point.

EXERCISES:

1. 128 x 45 ÷ 18 ÷ 2 =
2. 66 x 5,280 ÷ 60 ÷ 60 =
3. 3.2 x 1.5 ÷ 4.0 x 1.2 =
4. 250 x 15 ÷ 75 x 26 ÷ 2.5 =
5. 14.4 ÷ 7.2 x 2.22 ÷ .16 =
6. If oranges are selling at 8 for 99¢, how much will 5 dozen oranges cost?
7. Ms. Kelly is buying a new rug for her living room. The room measures 15 feet x 24 feet. How much will she have to pay for the rug if it is advertised at $19.50 per square yard?
8. A house is assessed for $11,500 and the tax rate is $3.45 per $100. How much must be paid in taxes?
9. Mr. Morgan wants to repave a driveway 15 feet wide and 54 feet long with concrete 6 inches thick. At $34.75 per cubic yard, what will the concrete cost?
10. What is 60 miles per hour in feet per second? How much is 45 miles per hour in feet per second?

ANSWERS:

1. 160.
2. 96.8
3. 1.44

4. 520.

5. 27.75

6. /.99/ --/÷/ --/8/ --/X/ --/5/ --/X/ --/12/ --/=/ --
   /SP/ 7.425 or $7.43

7. /15/ --/X/ --/24/ --/÷/ --/9/ --/X/ --/19.5/ --
   /=/ --/SP/ $780.

8. /11500/ --/÷/ --/100/ --/X/ --/3.45/ --/=/ --/SP/ $396.75

9. /15/ --/X/ --/54/ --/X/ --/.5/ --/÷/ --/27/ --/X/ --
   /34.75/ --/=/ --/SP/ $521.25

10. /60/ --/X/ --/5280/ --/÷/ --/60/ --/÷/ --/60/ --
    /=/ --/SP/ 88.
    /45/ --/X/ --/5280/ --/÷/ --/60/ --/÷/ --/60/ --
    /=/ --/SP/ 66.

SECTION B: COMPUTATIONAL SKILLS

B.7.: COMBINING BASIC OPERATIONS

OBJECTIVE: To perform calculations involving sequences of basic operations.

DISCUSSION: To solve many everyday problems it is necessary to perform a series of the basic arithmetic operations. The following conventions establish the order in which operations should be performed:

1. Perform multiplications and divisions in order from left to right.
2. Then perform additions and subtractions in order from left or right.
3. If a problem contains numerical expressions within parentheses or other symbols of inclusion, deal with these *first*, using rules 1 and 2 above.

EXAMPLE 1: 7 + 8 x 9 ÷ 12 - 8 =

SOLUTION: Press /8/ --/x/ --/9/ --/÷/ --/12/ --/+/ --/7/ -- /-/ --/8/ --/=/ --/SP/

You hear: 5 point.

EXAMPLE 2: (7 + 8) x 9 ÷ 12 - 8 =

SOLUTION: Press /7/ --/+/ --/8/ --/X/ --/9/ --/÷/ --/12/ --/-/ -- /8/ --/=/ --/SP/

You hear: 3 point 25.

EXERCISES:

1. 9 + 39 x 9 - 9 =
2. 6(5 + 8) + 7 - 32 =
3. 2 + (6 x 4 - 3) - 5 =

4. 12 x 6 ÷ 3 x 2 ÷ 48 =

5. (12 + 15 + 18) ÷ 3 =

6. (15 - 3 + 8 ÷ 2) ÷ 8 x 5 =

7. Listed below are the weights of the members of a football team. What is the average weight of the team?

Position	Weight (lb.)
right end	182
right tackle	198
right guard	215
center	202
left guard	209
left tackle	196
left end	188
halfback	177
quarterback	171
fullback	190
halfback	184

8. Ted has found the stereo he wants. If he pays cash, the stereo costs $325. Or, he can put $32.50 down and make 24 monthly payments of $13.75 each. How much will Ted save by paying cash?

9. In 16 basketball games Paula made 119 field goals and 66 foul shots. How many points did she average per game? (A field goal is worth 2 points; a foul shot is worth 1 point

10. In a certain city the rate for riding in a taxi is 60¢ per mile plus a flat charge of $1.20 as soon as the meter is turned on. If a woman takes a cab from her home

to her office, a distance of 9.5 mi., and gives the driver a tip of $1.05, what is the total amount she gives to the cab driver?

ANSWERS:

1. 351.
2. 53.
3. 18.
4. 1.
5. 15.
6. 10.
7. /182/ --/+/ --/198/ --/+/ --/215/ --/+/ --/202/ -- /+/ --/209/ --/+/ --/196/ --/+/ --/188/ --/+/ -- /177/ --/+/ --/171/ --/+/ --/190/ --/+/ --/184/ -- /÷/ --/11/ --/=/ --/SP/ 192.
8. /24/ --/X/ --/13.75/ --/+/ --/32.5/ --/-/ --/325/ -- /=/ --/SP/ $37.50
9. /2/ --/X/ --/119/ --/+/ --/66/ --/÷/ --/16/ --/=/ -- /SP/ 19.
10. /9.5/ --/X/ --/.6/ --/+/ --/1.2/ --/+/ --/1.05/ -- /=/ --/SP/ $7.95

SECTION C: FRACTIONS

C.1.: ENTERING FRACTIONS AND MIXED NUMBERS

OBJECTIVE: To express fractions and mixed numbers as decimals.

DISCUSSION: When a fraction is keyed in, the calculator represents it as a decimal. The fraction 1/5, for example, has a decimal value of 0.2. The fraction 1/3, on the other hand, has a decimal equivalency of 0.3333333 . . . The first decimal is called terminating; the second is called repeating because the digit 3 repeats itself endlessly. Remember that decimal equivalents of fractions are either terminating or repeating.

EXAMPLE 1: Key in 3/4 and listen to the resulting decimal.

SOLUTION: /3/ --/÷/ --/4/ --/=/ --/SP/

You hear: 0 point 75.

This is a terminating decimal.

EXAMPLE 2: Key in 36/99 and listen to the resulting decimal.

SOLUTION: /36/ --/÷/ --/99/ --/=/ --/SP/

You hear: 0 point 3636363.

This is a repeating decimal because the digits 3 and 6 repeat in sequence.

EXAMPLE 3: Key in 13 5/8 and listen to the resulting decimal.

SOLUTION: /5/ --/÷/ --/8/ --/+/ --/13/ --/=/ --/SP/

You hear: 13 point 625.

EXERCISES: Use your calculator to express each of the following as a decimal .

1. 7/16 2. 8/5 3. 8/32
4. 5 2/3 5. 15 7/8 6. 1/4

7. 16/3
8. 3/16
9. 316 15/112
10. 5/7
11. 65 9/36
12. 65 3/2
13. 5/6
14. 10 1/3
15. 1/8

ANSWERS:

1. 0.4375
2. 1.6
3. 0.25
4. 5.6666666
5. 15.875
6. 0.25
7. 5.3333333
8. 0.1875
9. 316.13392
10. 0.7142857
11. 65.25
12. 66.5
13. 0.8333333
14. 10.333333
15. 0.125

SECTION D: OTHER MATHEMATICAL OPERATIONS

D.1.: REPEATED USE OF THE /=/ KEY: ADDING AND SUBTRACTING

OBJECTIVE: To perform repetitive addition and subtraction on the calculator.

EXAMPLE 1: 6 + 1 + 1 + 1 + 1 =

SOLUTION: /6/ --/+/ --/1/ --/=/ --/SP/ --/=/ --/SP/ --/=/ -- /SP/ --/=/ --/SP/

You hear: 7 point, 8 point, 9 point, and 10 point. Notice that the calculator adds 1 each time you press /=/.

EXAMPLE 2: 36 - 2 - 2 - 2 - 2 =

SOLUTION: /36/ --/-/ --/2/ --/=/ --/SP/ --/=/ --/SP/ --/=/ -- /SP/ --/=/ --/SP/

You hear: 34 point, 32 point, 30 point, and 28 point. The calculator subtracted 2 each time you pressed /=/.

EXERCISES: Calculate. Be very careful to press the Equals Key the correct number of times.

1. 473 + 21 + 21 + 21 + 21 =
2. 39 + 120 + 120 + 120 + 120 + 120 =
3. 499 - 37 - 37 - 37 - 37 - 37 =
4. 100 + 25 + 25 + 25 + 85 - 15 - 15 - 15 =
5. 2,346 - 89 - 89 - 89 =
6. 591 + 82 + 82 + 82 - 50 - 50 - 50 - 50 =
7. For a special job, a construction foreman needed to rent a particular piece of machinery. The renting company wanted to charge him $58.75 plus $8.97 per day for every day it was kept out. How much must the foreman pay to use the machine for 4 days?

8. Juanita left for vacation with $414.00 that she had saved. During the first 5 days, she spent $32.00 a day, but she allowed herself to spend only $24.00 a day for the next 2 days. After these first 7 days, how much vacation money did Juanita have left?

ANSWERS:

1. 557.
2. 639.
3. 314.
4. 215.
5. 2,079.
6. 637.
7. /58.75/ --/+/ --/8.97/ --/=/ --/=/ --/=/ --/=/ --
   /SP/ $94.63
8. /414/ --/-/ --/32/ --/=/ --/=/ --/=/ --/=/ --/=/ --
   /-/ --/24/ --/=/ --/=/ --/SP/ $206.

SECTION D: OTHER MATHEMATICAL OPERATIONS

D.2.: REPEATED USE OF THE /=/ KEY: MULTIPLYING AND DIVIDING

OBJECTIVE: To perform repetitive multiplication and division on the calculator.

EXAMPLE 1: 4 x 3 x 3 x 3 x 3 =

SOLUTION: /4/ --/X/ --/3/ --/=/ --/=/ --/=/ --/=/ --/SP/

You hear: 324 point.

EXAMPLE 2: 2,000 ÷ 2 ÷ 2 ÷ 2 ÷ 2 =

SOLUTION: /2000/--/÷/ --/2/ --/=/ --/=/ --/=/ --/=/ --/SP/

You hear: 125 point.

EXERCISES:

1. 12 x 5 x 5 x 5 =
2. 4 x 4 x 4 x 4 x 4 =
3. 400 ÷ 4 ÷ 4 ÷ 4 =
4. 17.43 x 6 x 6 x 6 x 6 =
5. 4,320 ÷ 2 ÷ 2 ÷ 2 ÷ 2 ÷ 2 =
6. 50 x 3 x 3 x 3 x 7 x 7 x 7 =
7. If the amount that Bob is paid is doubled each day, how much will he make on the 10th day if his 1st day's pay is $25?

ANSWERS:

1. 1,500.
2. 1,024.
3. 6.25
4. 22,589.28
5. 135.
6. 463,050.
7. /25/ --/X/ --/2/ --/=/ --/=/ --/=/ --/=/ --/=/ --/=/ --/=/ --/=/ --/=/ --/SP/ $12,800.

SECTION D: OTHER MATHEMATICAL OPERATIONS

D.3.: REPEATED USE OF THE /=/ KEY: RAISING TO A POWER AND FINDING THE RECIPROCAL

OBJECTIVE: A) To raise a number to a power and;

B) To find the reciprocal of a number.

EXAMPLE 1: Find $(29)^5$

SOLUTION: /29/ --/X/ --/=/ --/=/ --/=/ --/=/ --/SP/

You hear: 20,511,149 point.

EXAMPLE 2: Find the reciprocal of 9

SOLUTION: /9/ --/÷/ --/=/ --/=/ --/SP/

You hear: 0 point 1111111.

EXERCISES: Calculate, being very careful to press the /=/ Key the correct number of times.

1. $(32)^4$ 2. $(11)^3$ 3. $(1.3)^5$
4. $(56)^3$ 5. $(83)^3$ 6. $(53)^2$

Find the reciprocals:

7. 17 8. 11 9. 31
10. 12 11. 14.26 12. 85.75

ANSWERS:

1. 1,048,576.
2. 1,331.
3. 3.71293
4. 175,616.
5. 571,787.
6. 2,809.
7. 0.0588235
8. 0.090909

9. 0.032258
10. 0.0833333
11. 0.0701262
12. 0.0116618

SECTION D: OTHER MATHEMATICAL OPERATIONS

D.4.: THE USE OF THE /x̲/ KEY: NEGATIVE NUMBERS

OBJECTIVE: To subtract, multiply, and divide negative integers on the calculator using the /x̲/ Key.

DISCUSSION: The Change Sign Key /x̲/ changes the sign of a number keyed into the calculator. For example, /2/ --/x̲/ --/SP/; You hear: Minus 2 point.

EXAMPLE 1: 86 - (-98) =

SOLUTION: /86/ --/-/ --/98/ --/x̲/ --/=/ --/SP/

You hear: 184 point.

EXAMPLE 2: 57 x (-32) =

SOLUTION: /57/ --/X/ --/32/ --/x̲/ --/=/ --/SP/

You hear: Minus 1,824 point.

EXAMPLE 3: 8,847 ÷ (-58) =

SOLUTION: /8847/ --/÷/ --/58/ --/x̲/ --/=/ --/SP/

You hear: Minus 152 point 53448.

EXERCISES:

1. 479 - (-86) =
2. -896 - (-357) =
3. 398 - (-75) =
4. -777 - (389) =
5. 2.5 - (-1.7) - (-5.3) =
6. 496 x (-4) =
7. -7.2 x (-3.9) =
8. 55 x (-55) =
9. .79 x (-.31) =
10. -16 x (-8) =

11. 5.73 ÷ (-.48) =

12. 619 ÷ (-37) =

13. 198 ÷ (-88) =

14. -97 ÷ (-128) =

15. -6.3 ÷ (-9) =

ANSWERS:

1. 565.
2. -539.
3. 473.
4. -1,166.
5. 9.5
6. -1,984.
7. 28.08
8. -3,025.
9. -0.2449
10. 128.
11. -11.9375
12. -16.729729
13. -2.25
14. 0.7578125
15. 0.7

SECTION D: OTHER MATHEMATICAL OPERATIONS

D.5.: BASIC OPERATIONS WITH THE /%/ KEY

OBJECTIVE: To compute percentage using the /%/ key.

EXAMPLE: Find 6% of 193.

SOLUTION: /193/ --/X/ --/6/ --/%/ --/SP/

You hear: 11 point 58.

EXERCISES:

1. 17% of $611.00 =
2. 0.4% of 1,179 =
3. 23.5% of 497 =
4. 11% of 671 =
5. 6% of 96 =
6. 8.5% of $3,000.00 =
7. 12% of $5,378.00 =

ANSWERS:

1. $103.87
2. 4.716
3. 116.795
4. 73.81
5. 5.76
6. $255.
7. $645.36

SECTION D: OTHER MATHEMATICAL OPERATIONS

D.6.: THE USE OF THE /√‾/ KEY

OBJECTIVE: To find square roots.

EXAMPLE: $\sqrt{625}$

SOLUTION: /625/ --/√‾/ --/SP/

You hear: 25 point.

EXERCISES: Find the square root of each of the following numbers.

1. 4,096 2. 64 3. 8 4. 256
5. 16 6. 4 7. 2 8. 1
9. 890 10. 1.7 11. 4.44 12. 632

ANSWERS:

1. 64.
2. 8.
3. 2.8284271
4. 16.
5. 4.
6. 2.
7. 1.4142135
8. 1.
9. 29.832867
10. 1.3038404
11. 2.1071307
12. 25.13961

SECTION D: OTHER MATHEMATICAL OPERATIONS

D.7.: LEARNING TO USE MEMORY--PART I

OBJECTIVE: To learn to use the Memory Key.

DISCUSSION: Memory makes it possible to store the results of a calculation for recall and use later on in a given problem.

The Memory Key is used in conjunction with four other keys in two-key sequences. The sequences and their functions are:

/M/ --/C/ clears memory. Before beginning any computation in a problem in which memory is to be used, memory should be cleared.

/M/ --/+/ stores the number currently on display in memory. If a number is already being stored in memory, this sequence will add the number on display to the contents of memory and store the sum.

/M/ --/-/ subtracts the number currently on display from the contents of memory and stores the difference.

/M/ --/=/ recalls the contents of memory for display and possible use. Although recalling memory destroys whatever number was previously on display, neither the contents of memory nor any pending operation is disturbed.

EXAMPLE 1:

a. Compute and store in memory: 14 + 25.

b. Clear display and recall memory.

SOLUTION:

a. /M/ --/C/ --/14/ --/+/ --/25/ --/=/ --/M/ --/+/

b. /C/ --/M/ --/=/ --/SP/

You hear: 39 point.

EXAMPLE 2:

a. Compute and store in memory: 4 x 8.

b. Compute and add to memory: 5 x 9.

c. Recall memory.

SOLUTION:

a. /M/ --/C/ --/4/ --/X/ --/8/ --/=/ --/M/ --/+/

b. /5/ --/X/ --/9/ --/=/ --/M/ --/+/

c. /M/ --/=/ --/SP/

You hear: 77 point.

Remember that each time the Equals Key is pressed the Speak Key may be pressed to give readout of the results of a computation.

EXERCISES:

1.a. Compute and store in memory: 37 x 6.
  b. Compute and add to memory: .037 x 6.
  c. Recall memory.

2.a. Compute and store in memory: 1.28 x 4.
  b. Compute and subtract from memory: 1.28 ÷ 4.
  c. Recall memory.

3.a. Compute and store in memory: 1481 x 13 x 19 x 27.
  b. Compute and add to memory: $(1111)^2$.
  c. Recall memory.

4.a. Compute and store in memory: 20 x 20.
  b. Compute and add to memory: 8 x 8.
  c. Compute and subtract from memory: 2 x 20 x 8.
  d. Recall memory.

5.a. Compute and store in memory: 5 x 5 x 5.
  b. Compute and add to memory: 4096 ÷ 4 ÷ 4.
  c. Recall memory.

ANSWERS:

1. 222.222
2. 4.8
3. 11,111,110.
4. 144.
5. 381.

SECTION D: OTHER MATHEMATICAL OPERATIONS

D.8.: LEARNING TO USE MEMORY--PART II

OBJECTIVE: To use memory in computations.

EXAMPLE 1: (21 + 9)(18 - 3) =

ANALYSIS: This problem can be broken down into two subproblems:

a. Compute (21 + 9) and store the sum in memory.

b. Compute the difference (18 - 3) and use it to multiply the number in memory after memory is recalled.

SOLUTION:

a. /M/ --/C/ --/21/ --/+/ --/9/ --/=/ --/M/ --/+/

b. /18/ --/-/ --/3/ --/X/ --/M/ --/=/ --/=/ --/SP/

You hear: 450 point.

Note that the Equals Key was pressed twice in succession. The first stroke completed the sequence

/M/ --/=/

which recalled memory. The second Equals Key stroke registere the product.

EXAMPLE 2: $\dfrac{8 \times 12.5 - 16 \times 4}{18} =$

ANALYSIS: This problem can be broken down into two subproblems:

a. Compute 16 x 4 and store the product in memory.

b. Compute 12.5 x 8 and subtract from it the contents of memory after memory has been recalled. Then divide by 18.

SOLUTION:

a. /M/ --/C/ --/16/ --/X/ --/4/ --/=/ --/M/ --/+/

b. /8/ --/X/ --/12.5/ --/-/ --/M/ --/=/ --/÷/ --/18/ --/=/ --

You hear: 2 point.

EXAMPLE 3: $\dfrac{1}{16}\left(\dfrac{10 \times 10 - 4}{3 \times 3 + 3}\right) =$

ANALYSIS: This problem may be broken down into three subproblems:

a. Compute and store in memory: 3 x 3 + 3.

b. Compute 10 x 10 - 4, divide by the contents of memory after memory has been recalled, clear memory, and store the quotient in memory.

c. Find the decimal equivalent of 1/16 and use this number to multiply the contents of memory after memory has been recalled.

SOLUTION:

a. /M/ --/C/ --/3/ --/X/ --/3/ --/+/ --/3/ --/=/ --/M/ --/+/

b. /10/ --/X/ --/10/ --/-/ --/4/ --/÷/ --/M/ --/=/ --/=/ --
/M/ --/C/ --/M/ --/+/

c. /1/ --/÷/ --/16/ --/X/ --/M/ --/=/ --/=/ --/SP/

You hear: 0 point 5.

EXERCISES:

1. (14 x 12 + 16 x 20 - 13 x 15 + 59) ÷ 62 =

2. $\frac{1369 - 361}{37 + 19} =$

3. 15(63 + 28) + 808 - 28,900 ÷ 17 =

4. $\frac{579 + 681}{9 \times 144} \times 3\ 1/5 =$

5. Ed earns $160 per week and Ellen earns $675 per month. Who earns more per year? How much more?

6. The walls and ceiling of a room 18 feet long, 15 feet wide, and 9 feet high are to be covered with 2 coats of paint; 64 square feet will have to be deducted for openings. One gallon of paint will cover 400 square feet of surface with 1 coat of paint. The paint sells for $9.80 per gallon. How many gallons of paint will be needed? How much will it cost?

7. Ms. Fuller bought 2 dozen eggs at 85¢ per dozen, 3 dozen oranges at 10 for 99¢, 2 3/4 pounds of round steak at $1.58 per pound, 4 boxes of facial tissue at 39¢ per box, 3 loaves of bread at 45¢ per loaf, 1 1/2 pounds of cheese at $1.80 per pound, and 5 pounds of ground beef at 89¢ per pound. What was her bill?
8. During the 12 weeks of vacation last summer John worked as a stock boy in his mother's drugstore for 8 hours a day, 5 days a week. However, he missed work for 4 days because of illness, and he went on a trip with his parents for 2 weeks in July. If John's total earnings for the summer were $920, and if his mother paid him by the hour, what was John's hourly rate of pay?

ANSWERS:

1. 5.6774193
2. 18.
3. 473.
4. 3.111111
5. /M/ --/C/ --/12/ --/X/ --/675/ --/=/ --/M/ --/+/ --/52/ --/X/ /160/ --/-/ --/M/ --/=/ --/=/ --/SP/ 220.; Ed, $220.
6. /M/ --/C/ --/2/ --/X/ --/9/ --/X/ --/18/ --/=/ --/M/ --/+/ /2/ --/X/ --/9/ --/X/ --/15/ --/=/ --/M/ --/+/ --/18/ --/X/ -- /15/ --/+/ --/M/ --/=/ --/-/ --/64/ --/÷/ --/400/ --/X/ -- /2/ --/=/ --/SP/ 4. DO NOT CLEAR

   /X/ --/9.8/ --/=/ --/SP/ 39.2 or $39.20.

7. /M/ --/C/ --/2/ --/X/ --/.85/ --/=/ --/M/ --/+/ --/12/ --/÷/ --
/10/ --/X/ --/.99/ --/X/ --/3/ --/=/ --/M/ --/+/ --/4/ --/X/ --
/2/ --/+/ --/3/ --/÷/ --/4/ --/X/ --/1.58/ --/=/ --/M/ --/+/ --
/4/ --/X/ --/.39/ --/=/ --/M/ --/+/ --/3/ --/X/ --/.45/ --/=/ --
/M/ --/+/ --/2/ --/X/ --/1/ --/+/ --/1/ --/÷/ --/2/ --/X/ --
/1.8/ --/=/ --/M/ --/+/ --/5/ --/X/ --/.89/ --/+/ --/M/ --/=/ --
/=/ --/SP/ 19.669 or $19.67.

8. /M/ --/C/ --/12/ --/X/ --/5/ --/-/ --/4/ --/=/ --/M/ --/+/ --
/2/ --/X/ --/5/ --/=/ --/M/ --/-/ --/M/ --/=/ --/X/ --/3/ --
/=/ --/M/ --/C/ --/M/ --/+/ --/920/ --/÷/ --/M/ --/=/ --/=/ --
/SP/ 2.5 or $2.50.

SECTION D: OTHER MATHEMATICAL OPERATIONS

D.9.: LEARNING TO USE MEMORY--PART III

OBJECTIVE: To use the Swap Key.

DISCUSSION: Pressing /S̄/, the Swap Key, causes the calculator to recall memory and put it on display and to transfer the number on display to memory. To understand what /S̄/ does, store a number in memory and put a different number on display. Then press /S̄/ and /S̄P̄/. Pressing /S̄/ again will restore the original conditions. When used properly, /S̄/ reduces the number of keystrokes in computations. The functions of /S̄/ are:

1. as a substitute for the sequence /M̄/ --/=̄/ if the number being recalled is to be used just once in a calculation.
2. as a substitute for the sequence /M̄/ --/=̄/ for checking memory. But Swap will not destroy the number that was previously on display as /M̄/ --/=̄/ does. And, as stated above, pressing /S̄/ a second time after verifying the contents of memory will restore the previous conditions of the memory and display.
3. as a substitute for the sequence /M̄/ --/C̄/ --/M̄/ --/+̄/. Used for this purpose, /S̄/ enters the display number into memory while at the same time establishing the conditions for the destruction of what was formerly stored in memory.

The examples which follow are those which were given in the last lesson. Note the reduced number of keystrokes required.

EXAMPLE 1: (21 + 9)(18 - 3) =

ANALYSIS:

a. Compute (21 + 9) and use /S/ to store the product in memory.

b. Compute (18 - 3) and use this difference to multiply the contents of memory, using /S/ to recall the memory.

SOLUTION:

a. /M/ --/C/ --/21/ --/+/ --/9/ --/=/ --/S/

b. /18/ --/-/ --/3/ --/X/ --/S/ --/=/ --/SP/

You hear: 450 point.

EXAMPLE 2: $\frac{8 \times 12.5 - 16 \times 4}{18} =$

ANALYSIS:

a. Compute 16 x 4 and use /S/ to store the product in memory.

b. Compute 8 x 12.5 and subtract from this the number in memory, using /S/ to recall the number. Then divide this difference by 18.

SOLUTION:

a. /M/ --/C/ --/16/ --/X/ --/4/ --/=/ --/S/

b. /8/ --/X/ --/12.5/ --/-/ --/S/ --/÷/ --/18/ --/=/ --/SP/

You hear: 2 point.

EXAMPLE 3. $\frac{1}{16}\left(\frac{10 \times 10 - 4}{3 \times 3 + 3}\right) =$

ANALYSIS:

a. Compute 3 x 3 + 3 and use /S/ to store the answer in memory.

b. Compute 10 x 10 - 4, divide by the contents of memory after /S/ has been pressed to recall memory, and use /S/ to store the quotient in memory.

c. Find the decimal equivalent of 1/16 and use this number to multiply the contents of memory, using /S/ to recall the number in memory.

SOLUTION:

a. /M/ --/C/ --/3/ --/X/ --/3/ --/+/ --/3/ --/=/ --/S/

b. /10/ --/X/ --/10/ --/-/ --/4/ --/÷/ --/S/ --/=/ --/S/

c. /1/ --/÷/ --/16/ --/X/ --/S/ --/=/ --/SP/

You hear: 0 point 5.

EXERCISES:

Repeat the exercises and problems from the last lesson, using the Swap Key where possible.

SECTION D: OTHER MATHEMATICAL OPERATIONS

D.10.: OVERFLOW

OBJECTIVE: To illustrate overflow conditions on the calculator.

DISCUSSION: Overflow occurs if an answer is larger than 99,999,999 or smaller than -99,999,999. When this happens the calculator divides the answer by 10^8, and announces "Overflow" before the readout. To obtain the correct answer when an overflow of this type occurs, simply multiply the readout by 10^8.

EXAMPLE 1: 3,865 x 100,000 =

SOLUTION: /3865/ --/X/--/100000/ --/=/ --/SP/

You hear: Overflow 3 point 865.

DISCUSSION: If an overflow condition occurs in the midst of a calculation, pressing /C/ once divides the display by 10^8 and allows completion of the calculation.

EXAMPLE 2: 4,213 x 200,000 x 4 =

SOLUTION: /4213/ --/X/ --/200000/ --/X/ --/4/ --/C/ --/4/ --
/=/ --/SP/

You hear: 33 point 704, so the correct answer to the calculati
is 33.704 x 10^8.

Note that since "Overflow" was announced instead of the "4," the "4" had to be re-entered.

EXERCISES:

1. 27,500 x 12,000 =
2. 127,000 x 48,260 =
3. 21,780 x 21,780 x 5,000 =
4. What is the total salary of 123,000 workers if each is paid $15,000 per year?

5. If 2 million people each paid $395 for a calculator, what would the total price be?

ANSWERS:

1. Overflow 3.3
2. Overflow 61.2902
3. Overflow 23,718.42
4. Overflow 18.45
5. Overflow 7.9

SECTION D: OTHER MATHEMATICAL OPERATIONS

D.11.: UNDERFLOW AND ERROR CONDITIONS

OBJECTIVE: To illustrate underflow and error conditions on the calculator.

DISCUSSION: Underflow occurs if an answer has more than 8 significant digits but is not larger than 99,999,999 or smaller than -99,999,999.

EXAMPLE 1: 12.005 x 12.345 =

SOLUTION: /12.005/ --/X/ --/12.345/ --/=/ --/SP/

You hear: 148 point 20172.

Note that only the eight most significant digits are included in the readout.

DISCUSSION: An error condition occurs when a mathematically illogical entry is made.

EXAMPLE 2: $\sqrt{-16}$

SOLUTION: /-/ --/16/ --/√‾/ --/SP/

You hear: Overflow 16 point.

EXERCISES:

1. 56.075 x 123.621 =
2. 21.004 x 13.786 x 8.34 =
3. 1.02 x 5.78 x 3.11 x 4.04 =
4. 58,367 x .000294 =
5. $\sqrt{-48}$
6. $\sqrt{-25}$
7. 21 ÷ 0

ANSWERS:

1. 6,932.0475
2. 2,414.9399
3. 74.074676

4. 17.159898
5. Overflow 48.
6. Overflow 25.
7. Overflow 0.

SECTION E: THE CALCULATOR IN DAILY LIVING

E.1.: SALE PRICE

OBJECTIVE: To compute the sale price when given the list price and the rate of discount.

EXAMPLE 1: The list price of a tape recorder is $100. The discount is 30%. Find the sale price.

SOLUTION: /100/ --/-/ --/30/ --/%/ --/=/ --/SP/

You hear: 70 point. Thus the sale price is $70.

EXAMPLE 2: The list price of a tape recorder is $100. Two successive discounts are given, each of 15%. Find the sale price.

SOLUTION: /100/ --/-/ --/15/ --/%/ --/-/ --/15/ --/%/ --/=/ --/SP/

You hear: 72 point 25. The sale price is $72.25.

Which is better, one 30% discount, or two successive 15% discounts? Can you give the answer?

EXERCISES: Find the sale price for the following.

	LIST PRICE	DISCOUNT(S)
1.	$ 45.00	13%
2.	$ 27.50	40%
3.	$ 15.00	20%, 15%
4.	$2,765.00	30%, 10%

5. A man received $65,000 for a house he had built. However, he must deduct 5% from that amount to pay taxes and then deduct another 3% to pay the salesperson who negotiated the sale for him. After the builder deducts the taxes and sales commission, how much will he actually get from the sale of his house?

6. A woman has been admiring a pretty table in an antique shop. The first time she saw it, it was $756. Three weeks later "20% off" had been marked on the price tag. When the woman asked about the new price, the owner said she could get an additional 10% discount for paying cash and a 10% discount from that if she could transport the table home herself. What was the selling price of the table then?

7. A set of dishes regularly sells for $150. For a limited time, a 40% discount is given. Another set of dishes regularly sells for $100 and a 15% discount is given. Which set is cheaper?

ANSWERS:

1. /45/ --/-/ --/13/ --/%/ --/=/ --/SP/ $39.15
2. /27.5/ --/-/ --/40/ --/%/ --/=/ --/SP/ $16.50
3. /15/ --/-/ --/20/ --/%/ --/-/ --/15/ --/%/ --/=/ --/SP/ $10.20
4. /2765/ --/-/ --/30/ --/%/ --/-/ --/10/ --/%/ --/=/ -- /SP/ $1,741.95
5. /65000/ --/-/ --/5/ --/%/ --/-/ --/3/ --/%/ --/=/ -- /SP/ $59,897.50
6. /756/ --/-/ --/20/ --/%/ --/-/ --/10/ --/%/ --/-/ -- /10/ --/%/ --/=/ --/SP/ $489.89
7. /150/ --/-/ --/40/ --/%/ --/=/ --/SP/ $90.;
   /100/ --/-/ --/15/ --/%/ --/=/ --/SP/ $85.

SECTION E: THE CALCULATOR IN DAILY LIVING

E.2.: DISCOUNTS

OBJECTIVE: To compute the rate of discount when given the list and the sale price.

EXAMPLE: If an item has been reduced from $9.50 to $7.88, what is the rate of discount?

SOLUTION: The problem of finding the rate of discount when the list price and selling price are given may be broken down into two subproblems:

First, determine the dollar discount: list price - sale price; Then, find the rate of discount: dollar discount ÷ list price x 100.

Therefore on the calculator:

/9.5/ --/-/ --/7.88/ --/÷/ --/9.5/ --/X/ --/100/ --
/=/ --/SP/

You hear: 17 point 05263. Rounded to the nearest tenth of a percent, this represents a 17.1% discount.

EXERCISES: Find the rate of discount for the following and round to the nearest tenth of a percent.

	LIST PRICE	SALE PRICE
1.	$ 534.00	$ 401.00
2.	$ 39.95	$ 16.88
3.	$75,000.00	$73,200.00
4.	$6,340.00	$ 4,900.00
5.	$ 748.50	$ 545.00

ANSWERS:

1. 24.90636 or 24.9%
2. 57.74718 or 57.7%
3. 2.4 or 2.4%
4. 22.71293 or 22.7%
5. 27.1877 or 27.2%

SECTION E: THE CALCULATOR IN DAILY LIVING

E.3.: RATE OF INCREASE OR DECREASE

OBJECTIVE: To compute the rate of increase or decrease.

EXAMPLE 1: A car that sold for $3,700 last year now sells for $4,000. Find the rate of increase.

Note: new price - old price = amount of increase.

(Amount of increase ÷ old price) X 100 = rate of increase.

SOLUTION: /4000/ --/-/ --/3700/ --/÷/ --/3700/ --/X/ --/100/ -- /=/ --/SP/

You hear: 8 point 1081. Round this off to 8.1%. Since the price went up, this represents a rate increase.

Remember that you always divide by the former price.

EXAMPLE 2: A calculator that sold for $103 last year now sells for $56. Find the rate of decrease.

SOLUTION: /103/ --/-/ --/56/ --/÷/ --/103/ --/X/ --/100/ -- /=/ --/SP/

You hear: 45 point 63106. Therefore there was a 45.6% decrease.

EXERCISES:

1. A house that was bought for $58,000 last year sells for $69,000 one year later. Find the rate of increase.

2. The payroll of a certain company was $1,296,000 this year and $1,158,000 last year. Find the rate of increase.

3. A man worked 112 hours for the community last year. This year he put in only 75 hours. Find the rate of decrease

4. A woman sold 26 sets of encyclopedias last year and 62 sets this year. Find the rate of increase.

ANSWERS:

1. /69000/ --/-/ --/58000/ --/÷/ --/58000/ --/X/ -- /100/ --/=/ --/SP/ 18.96551 or 19.0%
2. /1296000/ --/-/ --/1158000/--/÷/ --/1158000/ -- /X/ --/100/ --/=/ --/SP/ 11.91709 or 11.9%
3. /112/ --/-/ --/75/ --/÷/ --/112/ --/X/ --/100/ -- /=/ --/SP/ 33.03571 or 33.0%
4. /62/ --/-/ --/26/ --/÷/ --/26/ --/X/ --/100/ -- /=/ --/SP/ 138.46153 or 138.5%

SECTION E: THE CALCULATOR IN DAILY LIVING

E.4.: INSTALLMENT BUYING--PART I

OBJECTIVE: To compute the charges involved in installment buying over a specific number of months.

DISCUSSION: A stereo set system can be bought for $675 cash or for $75 down and 12 monthly payments of $60.50. How much more do you pay if you buy on the installment plan? This is called an installment charge. What percent increase does it represent over the cash price?

Installment price = 12 X $60.50 + $75 = $801.

Installment charge = $801 - $675 = $126.

Rate of increase over cash price = 126 ÷ 675 X 100 = 18.66%, rounded to the nearest hundredth of a percent.

EXAMPLE: A refrigerator can be bought for $425 cash or $45 down and 12 monthly payments of $40 each. Find the installment price, the installment charge, and the percent of the list price that the installment charge represents.

SOLUTION: /12/ --/X/ --/40/ --/+/ --/45/ --/=/ --/SP/

You hear: 525 point. $525 represents the installment price

Do not clear the calculator.

Press /-/ --/425/ --/=/ --/SP/

You hear: 100 point. $100 represents the installment charg

Do not clear the calculator.

Press /÷/ --/425/ --/X/ --/100/ --/=/ --/SP/

You hear: 23 point 52941.

23.53% represents the rate of increase.

EXERCISES: Find the installment price, the installment charge, and the rate of increase over the list price.

1. A radio sells regularly for $53.32. It may be bought on the installment plan for $10 down, and 12 monthly payments of $4 each.

2. A car is listed at $4,400. On the installment plan, it can be bought for $500 down and 12 monthly payments of $400 each.

3. A sofa is advertised for $600. On the installment plan it can be bought for a down payment of 25% of the list price and 10 monthly payments of $55 each.

ANSWERS:

1. (a) /12/ --/X/ --/4/ --/+/ --/10/ --/=/ --/SP/ 58. or $58.00, installment price. DO NOT CLEAR
   (b) /-/ --/53.32/ --/=/ --/SP/ 4.68 or $4.68, installment charge. DO NOT CLEAR
   (c) /÷/ --/53.32/ --/X/ --/100/ --/=/ --/SP/ 8.77719 or 8.78%, rate of increase.
2. (a) /12/ --/X/ --/400/ --/+/ --/500/ --/=/ --/SP/ 5,300. or $5,300.00, installment price. DO NOT CLEAR
   (b) /-/ --/4400/ --/=/ --/SP/ 900. or $900.00, installment charge. DO NOT CLEAR
   (c) /÷/ --/4400/ --/X/ --/100/ --/=/ --/SP/ 20.45454 or 20.45%, rate of increase.
3. (a) /600/ --/X/ --/25/ --/%/ --/+/ --/55/ --/=/ -- /=/ --/=/ --/=/ --/=/ --/=/ --/=/ --/=/ -- /=/ --/=/ --/SP/ 700. or $700.00, installment price. DO NOT CLEAR

3. (b) /-/ --/600/ --/=/ --/SP/ 100. or $100.00, installment charge. DO NOT CLEAR

   (c) /÷/ --/600/ --/X/ --/100/ --/=/ --/SP/ 16.66666 or 16.67%, rate of increase.

SECTION E: THE CALCULATOR IN DAILY LIVING

E.5.: INSTALLMENT BUYING--PART II

OBJECTIVE: To compute the charges involved in installment buying when no specific number of months is given.

EXAMPLE: An encyclopedia set can be bought for $306 cash.

However, the salesperson suggests that you pay $100 down and the remainder in monthly payments of $50 each.

You will be charged 1 3/4% interest each month on the outstanding balance. To determine the required number of monthly payments and the charges involved, study the following explanation.

Balance to be financed is $306 - $100 = $206.

The record of payment therefore would be as follows:

Month 1, the balance of $206 becomes $209.61 because of the 1.75% interest. Subtracting a $50 payment results in a remaining balance of $159.61.

Month 2, the balance of $159.61 becomes $162.40 because of the 1.75% interest. Subtracting a $50 payment results in a remaining balance of $112.40.

Month 3, now the balance of $112.40 becomes $114.37. Subtracting a $50 payment results in a remaining balance of $64.37.

Month 4, the balance of $64.37 becomes $65.50. After a $50 payment, it becomes $15.50.

Month 5, the remaining $15.50 being less than a $50 monthly payment, becomes a partial payment. 1 3/4%

interest on this amount is $15.77, the last payment.

Record all the amounts which have been subtracted and find the total. In this problem the total is: $100 + $50 + $50 + $50 + $50 + $50 + $15.77 = $315.77 = installment price. Therefore, $315.77 -$306 = $9.77 = installment charge. This is how it would be done on the calculator. Remember to record the amount every time you subtract, or use the memory to accumulate either the interest charges or the payments made.

/306/ --/-/ --/100/ --/+/ --/1.75/ --/%/ --/=/ --/SP/

You hear: 209 point 605, or $209.61. Record.

Press /-/ --/50/ --/+/ --/1.75/ --/%/ --/=/ --/SP/

You hear: 162 point 39808. Rounding off to the nearest cent gives $162.40. Record.

Press /-/ --/50/ --/+/ --/1.75/ --/%/ --/=/ --/SP/

You hear: 114 point 36504. Rounding gives $114.36. Record.

Press /-/ --/50/ --/+/ --/1.75/ --/%/ --/=/ --/SP/

You hear: 65 point 491428. Rounding gives $65.50. Record.

Press /-/ --/50/ --/+/ --/1.75/ --/%/ --/=/ --/SP/

You hear: 15 point 762527. Rounding gives $15.76. Record.

Note that this last spoken output is the last payment.

EXERCISES:

1. A refrigerator sells for $530. How much will it cost if you pay $100 down and the remainder in monthly payments of $80 each and you are charged 1 3/4% interest each month on the outstanding balance? How many months would you make payments?

2. Do the exercise above at interest rates such as 2% and 2 1/4%.

ANSWERS: 1.(a) /530/ --/-/ --/100/ --/+/ --/1.75/ --/%/ --/M/ -- /+/ --/=/ --/SP/ 437.525 or $437.52 = Balance month 1

/-/ --/80/ --/+/ --/1.75/ --/%/ --/M/ --/+/ -- /=/ --/SP/ 363.78168 or $363.78 = Balance month 2

/-/ --/80/ --/+/ --/1.75/ --/%/ --/M/ --/+/ --/=/ --/SP/ 288.74785 or $288.75 = Balance month 3

/-/ --/80/ --/+/ --/1.75/ --/%/ --/M/ --/+/ --/=/ -- /SP/ 212.40093 or $212.40 = Balance month 4

/-/ --/80/ --/+/ --/1.75/ --/%/ --/M/ --/+/ --/=/ -- /SP/ 134.71794 or $134.72 = Balance month 5

/-/ --/80/ --/+/ --/1.75/ --/%/ --/M/ --/+/ --/=/ -- /SP/ 55.675503 or $55.68 = Final payment month 6

(b) /530/ --/+/ --/M/ --/=/ --/=/ --/SP/ 555.67553 = installment price or $555.68. That is the list price plus the accumulated interest charges stored in memory.

2. Use the flow-diagram of problem #1, replacing 1.75 first with 2 and then with 2.25.

(a) Installment price at 2% = 559.60016 or $559.60

Number of months at 2% = 6

(b) Installment price at 2.25% = 563.59114 or $563.59

Number of months at 2.25% = 6

SECTION E: THE CALCULATOR IN DAILY LIVING

E.6.: SIMPLE INTEREST

OBJECTIVE: To compute simple interest.

DISCUSSION: If $1,000 is deposited in your savings account for 5 years at simple interest rate of 8%, you would receive $400 of interest. To compute this use the formula: Interest = Principal x Rate x Time. Interest = $1,000 x 8% x 5.

EXAMPLE: A person deposited $1,000 in a savings account for 6 months at 8 1/2% simple interest. Find the interest.

Note that when using the interest formula time must always be expressed in years.

SOLUTION: /1000/ --/X/ --/8.5/ --/%/ --/X/ --/.5/ --/=/ --/SP/

You hear: 42 point 5. Thus the interest was $42.50. The person now has a total of $1,042.50.

EXERCISES: Find the interest for the following circumstances.

1. $350 is deposited for 3 years at 7 1/2% simple interest.
2. $12,143.75 is deposited for 20 years at 6 1/4% simple interest.
3. $10,000 is invested for 5 years at 10% simple interest.

ANSWERS:

1. /350/ --/X/ --/7.5/ --/%/ --/X/ --/3/ --/=/ --/SP/
   78.75 or $78.75
2. /12143.75/ --/X/ --/6.25/ --/%/ --/X/ --/20/ --/=/
   /SP/ 15,179.687 or $15,179.69
3. /10000/ --/X/ --/10/ --/%/ --/X/ --/5/ --/=/ --/SP/
   5,000. or $5,000.00

SECTION E: THE CALCULATOR IN DAILY LIVING

E. 7.: COMPOUND INTEREST

OBJECTIVE: To compute compound interest.

DISCUSSION: Compound interest is computed on the original amount of the principal and then periodically on the amount of the principal plus whatever interest has been accumulated.

The following discussion will illustrate how this is done. A short cut formula will then be given.

Suppose $1,000 is deposited into a savings account for one year at the interest rate of 8% compounded quarterly. Remember interest = principal x rate x time.

After the first 3 months: interest = 1,000 x 8% x .25

or 1,000 x 2% = $20.00.

After the next 3 months: interest = 1,020 x 8% x .25

or 1,020 x 2% = $20.40.

After the next 3 months: interest = 1,040.40 x 8% x .25

or 1,040.40 x 2% = $20.81.

After the last 3 months: interest = 1,061.21 x 8% x .25

or 1,061.21 x 2% = $21.22.

The total amount after one year is $1,082.43.

The following formula can be used to solve the same problem:

$$A = (1 + i)^n P$$

Where:

A = final total amount, that is, principal + interest.

P = principal.

i = interest rate per compound period. (In this case i = 2% and not 8%, because of 8% compounded quarterly)

n = number of interest periods. (Here n = 4 interest periods.

So, $A = (1 + 2\%)^4\ (1{,}000)$;

And the answer is $1082.43.

EXAMPLE: $500 is deposited for 2 years at 8% compounded semi-annually. What will be the total amount after 2 years? Notice that in the above formula, i = 4%, n = 4, P = 500.

Therefore, $A = (1 + i)^n\ P =$

$$(1 + 4\%)^4\ (500).$$

SOLUTION: /1/ --/+/ --/4/ --/%/ --/X/ --/=/ --/=/ --/=/ --/X/ --/500/ --/=/ --/SP/

You hear: 584 point 92925.

The total amount after 2 years is $584.93.

EXERCISES:

1. $500 is deposited for 4 years at 10% compounded annually. So, i = 10%, n = 4, P = 500. Find A, which is the total amount after the 4 years.

2. $500 is deposited for 4 years at 10% compounded semi-annually. So, i = 5%, n = 8, P = 500. Find A.

3. $700 is deposited for 2 years at 8% compounded quarterly. So, i = 2%, n = 8. Find A.

4. $1,000 is deposited for 6 years at 6% compounded semi-annually. Find A.

5. $300 is deposited for one year at 7 1/2% compounded semi-annually. So, i = 3.75%. Find A.

6. $2,125 is deposited for 5 years at 9 3/4% compounded annually. Find A.

7. $1,800 is deposited for 2 years at 6 1/2% compounded semi-annually. Find A.

8. $250 is deposited for 3 years at 9% compounded annually. Find A.

ANSWERS:

1. /1/ --/+/ --/10/ --/%/ --/X/ --/=/ --/=/ --/=/ -- /X/ --/500/ --/=/ --/SP/ 732.05 or $732.05

2. /1/ --/+/ --/5/ --/%/ --/X/ --/=/ --/=/ --/=/ -- /=/ --/=/ --/=/ --/=/ --/X/ --/500/ --/=/ -- /SP/ 738.7276 or $738.73

3. /1/ --/+/ --/2/ --/%/ --/X/ --/=/ --/=/ --/=/ -- /=/ --/=/ --/=/ --/=/ --/X/ --/700/ --/=/ -- /SP/ 820.16144 or $820.16

4. /1/ --/+/ --/3/ --/%/ --/X/ --/=/ --/=/ --/=/ -- /=/ --/=/ --/=/ --/=/ --/=/ --/=/ --/=/ -- /=/ -- /X/ --/1000/ --/=/ --/SP/ 1,425.7604 or $1,425.76

5. /1/ --/+/ --/3.75/ --/%/ --/X/ --/=/ --/X/ --/300/ -- /=/ --/SP/ 322.92186 or $322.92

6. /1/ --/+/ --/9.75/ --/%/ --/X/ --/=/ --/=/ --/=/ -- /=/ --/X/ --/2125/ --/=/ --/SP/ 3,383.6194 or $3,383.62

7. /1/ --/+/ --/3.25/ --/%/ --/X/ --/=/ --/=/ --/=/ -- /X/ --/1800/ --/=/ --/SP/ 2,045.6564 or $2,045.66

8. /1/ --/+/ --/9/ --/%/ --/X/ --/=/ --/=/ --/X/ -- /250/ --/=/ --/SP/ 323.75725 or $323.76

SECTION E: THE CALCULATOR IN DAILY LIVING

E.8.: BEST BUYS

OBJECTIVE: To determine the "best buy."

DISCUSSION: Stores often present a particular item in a variety of sizes and it is up to the customer to determine the best buy.

EXAMPLE: A cereal sells for $1.85 for 32 ounces or 75¢ for 10.5 ounces. To find the better buy:

$$\frac{\text{price}}{\text{weight}} = \text{price per unit weight}$$

SOLUTION: /1.85/ --/÷/ --/32/ --/=/ --/SP/

You hear: 0 point 0578125, or 5.8¢ per ounce, rounding off to the nearest tenth of a cent. Record. Now press:

/.65/ --/÷/ --/10.5/ --/=/ --/SP/

You hear: 0 point 0619047, or 6.2¢ per ounce, rounding off to the nearest tenth of a cent. Compare this answer to .058 cents per ounce.

The package of 32 ounces for $1.85 represents the better buy.

EXERCISES: Determine the better buy for the following circumstances.

1. A tomato paste sells for 25¢ for a 6 ounce tin or 40¢ for an 8 ounce tin.
2. Peanut butter sells for $1.18 for 1 pound or $4.00 for 5 pounds.
3. Some scouring pads sell 10 pads for 51¢ or 4 pads for 25¢.
4. Honey sells at 78¢ for 10 ounces or $4.89 for 5 pounds.

ANSWERS:

1. /.25/ --/÷/ --/6/ --/=/ --/SP/ 0.0416666 or 4.2¢

   /.4/ --/÷/ --/8/ --/=/ --/SP/ 0.05 or 5¢

   The 8 ounce tin for 40¢ is the better buy.

2. /1.18/ --/÷/ --/1/ --/=/ --/SP/ 1.18 or $1.18

/4/ --/÷/ --/5/ --/=/ --/SP/ 0.8 or 80¢

Five pounds for $4.00 is the better buy.

3. /.51/ --/÷/ --/10/ --/=/ --/SP/ 0.051 or 5.1¢

/.25/ --/÷/ --/4/ --/=/ --/SP/ 0.0625 or 6.3¢

The better buy is 10 pads for 51¢.

4. /.78/ --/÷/ --/10/ --/=/ --/SP/ 0.078 or 7.8¢

/4.8/ --/÷/ --/80/ --/=/ --/SP/ 0.06 or 6¢

The honey at $4.80 for 5 pounds is the better buy.

SECTION E: THE CALCULATOR IN DAILY LIVING

E. 9.: PAYROLLS

OBJECTIVE: To calculate payrolls.

DISCUSSION: There are many different ways of calculating a salary. The following will illustrate this. Remember that these wages represent gross wages -- usually many deductions are made.

EXAMPLE 1: A saleswoman receives a basic salary of $200 a week plus a commission of 6% based on her sales. This week she sold $1,500 worth of merchandise. What is her weekly wage?

SOLUTION: /1500/ --/X/ --/6/ --/%/ --/+/ --/200/ --/=/ -- /SP/

You hear: 290 point. Her weekly wage is $290.00.

EXAMPLE 2: A tradesman works for $4.25 an hour for a 40-hour week. What is his weekly wage?

SOLUTION: /4.25/ --/X/ --/40/ --/=/ --/SP/

You hear: 170 point. His weekly wage is $170.00.

EXAMPLE 3: A teacher receives $12,800 a year, paid in 12 monthly paychecks. What is her monthly salary?

SOLUTION: /12800/ --/÷/ --/12/ --/=/ --/SP/

You hear: 1,066 point 6666. Her monthly salary is $1,066.67.

EXAMPLE 4: A man works in an electronic plant assembling particular units. He is paid $4.75 for each unit he assembles. Normally he averages 7.5 units a day. What is his average weekly salary for 5 working days per week?

SOLUTION: /7.5/ --/X/ --/4.75/ --/X/ --/5/ --/=/ --/SP/

You hear: 178 point 125. His average salary is $178.13.

EXERCISES:

1. A swim instructor receives $3.25 an hour and averages 22 hours of instruction a week. How much does she make in a week?

2. A real estate salesman receives a 3% commission on his sales. During the last 2 months, he sold one house for $68,300. What is his average monthly salary for these 2 months?

3. A woman works for a co-op 6 hours a day, 5 days a week for a basic hourly wage of $1.75. At the end of the year she will also receive 1/20 of the profits. This year the profits were $47,300. On the basis of the hourly wage, what is her weekly salary? What will be her yearly share of the profits? What, then, is her total weekly wage? (Use 52 weeks in one year.)

ANSWERS:

1. /3.25/ --/X/ --/22/ --/=/ --/SP/ 71.5 or $71.50

2. /68300/ --/X/ --/3/ --/%/ --/÷/ --/2/ --/=/ --/SP/
1,024.5 or $1,024.50

3.(a) /1.75/ --/X/ --/6/ --/X/ --/5/ --/=/ --/SP/ 52.5 or $52.

(b) /47300/ --/÷/ --/20/ --/=/ --/SP/ 2,365. or $2,365.00

(c) /52/ --/X/ --/52.5/ --/+/ --/2365/ --/÷/ --/52/ --
/=/ --/SP/ 97.98076 or $97.98

SECTION E: THE CALCULATOR IN DAILY LIVING

E.10.: THE STOCK EXCHANGE

OBJECTIVE: To compute profits and losses on the stock market.

DISCUSSION: The stock, General Foods, is listed under the New York Stock Exchange one day as follows:

GnFds closing 35 1/8 net change + 1/8

This means that each share is worth $35 1/8 and that this represents an increase of $1/8 from the previous day.

EXAMPLE: Mr. Jones owns 200 shares of General Foods. Suppose he paid $24 3/8 a share 2 years ago. What would be his profit if he sold now at $35 1/8? Remember that a 2% commission is usually paid to the broker when buying or selling.

24 3/8 = 3 ÷ 8 + 24 = $24.375

He paid: 24.375 x 200 + 2% = $4,972.50.

35 1/8 = 1 ÷ 8 + 35 = $35.125

He can sell for: 35.125 x 200 + 2% = $7,165.50.

Profit: 7,165.50 - 4,972.50 = $2,193.

Rate of increase: 2,193 ÷ 4,972.50 x 100 = 44.1%.

Annual increase: 44.1 ÷ 2 = 22.05%.

SOLUTION: /3/ --/÷/ --/8/ --/+/ --/24/ --/X/ --/200/ --/+/ --
/2/ --/%/ --/=/ --/SP/

You hear: 4,972 point 5 or $4,972.50. Record this buying price

(Do not clear.)

Press /S/ --/1/ --/÷/ --/8/ --/+/ --/35/ --/X/ --
/200/ --/+/ --/2/ --/%/ --/=/ --/SP/

You hear: 7,165 point 5 or $7,165.50. Record this selling price. (Do not clear.)

Press /-/ --/M/ --/=/ --/=/ --/SP/

You hear: 2,193 point or $2,193.00. Record this profit. (Do not clear.)

Press /÷/ --/M/ --/=/ --/=/ --/X/ --/100/ --/=/ --/SP/

You hear: 44 point 10256. Record this as a 44.1% rate of increase. (Do not clear.)

Press /÷/ --/2/ --/=/ --/SP/

You hear: 22 point 05128. Record this annual rate of increase as 22.05%.

ERCISE: A woman sells 50 shares of Xerox which are listed at 51 3/8. She bought them 18 months ago for 44 5/8. Calculate the following: buying price, selling price (include commissions), profit, rate of increase, annual rate of increase. When finding the annual rate of increase, divide by 1.5 years.

ISWERS: Buying price = /5/ --/÷/ --/8/ --/+/ --/44/ --/X/ --
/50/ --/+/ --/2/ --/%/ --/=/ --/SP/ 2,275.875 or $2,275.88.

Selling price = /S/ --/3/ --/÷/ --/8/ --/+/ --/51/ --
/X/ --/50/ --/+/ --/2/ --/%/ --/=/ --/SP/
2,620.125 or $2,620.13.

Profit = /-/ --/M/ --/=/ --/=/ --/SP/ 344.25 or $344.25.

Rate of increase = /÷/ --/M/ --/=/ --/=/ --/X/ --/100/ --
/=/ --/SP7 15.12605 or 15.13%.

Annual rate of increase = /÷/ --/1.5/ --/=/ --/SP/
10.084033 or 10.1%.